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Effectiveness of Foliar Fungicides by Timing on Hybrid Corn

Abstract

Fungicide use on hybrid corn has increased considerably in the past four growing seasons primarily due to reports of increased yields, even in the absence of disease and higher corn prices. A number of fungicides are registered for use on corn. The objectives of this project were to 1) assess the effect of timing of application of fungicides on standability, 2) evaluate the yield response of hybrid corn to foliar fungicide application, and 3) to discern differences, if any, between fungicide products.

Keywords

A11111, Plant Pathology

Disciplines

Agricultural Science | Agriculture | Plant Pathology

Effectiveness of Foliar Fungicides by Timing on Hybrid Corn

RFR-A11111

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Introduction

Fungicide use on hybrid corn has increased considerably in the past four growing seasons primarily due to reports of increased yields, even in the absence of disease and higher corn prices. A number of fungicides are registered for use on corn. The objectives of this project were to 1) assess the effect of timing of application of fungicides on standability, 2) evaluate the yield response of hybrid corn to foliar fungicide application, and 3) to discern differences, if any, between fungicide products.

Materials and Methods

Headline (6 oz/acre), Headline AMP (10 oz/acre), Quadris (6 oz), Quilt Xcel (14 oz/acre), and Stratego YLD (4 oz/acre) were each applied to hybrid corn DKC55-09 at either one of three growth stages V6, R1, and R2 (blister) or, at V6 followed by a second application at R1. The experimental design was a randomized plot design. Each plot was 4 rows wide (30-in. row spacing) by 63 ft long. Corn was planted May 9 with a 7000 series John Deere 8-row planter calibrated to plant 35,077 seeds/acre on corn following corn. Fungicides were applied with either a 10 ft hand boom at 20 gpa at V6 on

June 15, or a Hagie high clearance sprayer at 15 gpa on July 20 (R1) and August 3 (R2). Spray solutions were applied in a volume of 15 gallons/acre. Ear Leaf disease ratings were assessed 4 and 6 weeks after R1 spraying. At R6 (September 22), top dieback and whole plot leaf disease ratings were assessed. Two days prior to harvest, lodging was assessed by push test of 20 plants in each plot. All four rows of each plot were harvested with a John Deere 9450 combine on October 15.

Results and Discussion

Ear leaf disease severity was reduced ($P<0.1$) for all treatments applied at R1 or R2 except Stratego YLD applied at R1. Northern leaf blight (NLB) developed during mid-grain fill and treatment effects on NLB severity were detected ($P<0.1$). An application of a fungicide at R2 was most effective at reducing NLB in the canopy above the ear leaf. There was no evidence of an effect of fungicide treatment on anthracnose top dieback or lodging ($P<0.1$). Although yield differences were not significantly different from the check ($P<0.1$), all treatments yielded minimally higher.

Studies on the efficacy of foliar fungicide timing for disease management and yield response are expected to continue in 2012.

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Ken Pecinovsky, ISU Northeast Research Farm, Nashua, Iowa.

Table 1. Effect of fungicide and timing of fungicide applications on stalk rot severity, yield, and harvest moisture of corn at Nashua, Iowa.

Treatments	Disease severity (%)				Push test ^d	Yield ^e	Harvest moisture
	Ear leaf 1 ^a	Ear leaf 2 ^a	Upper canopy ^b	Top dieback ^c			
Check 1	2.75	3.45	22.50	8.50	0.50	229.6	19.9
Headline 6 oz V6	2.20	3.05	23.75	11.00	1.00	231.6	19.9
Headline AMP 10 oz R1	1.10	1.70	11.25	8.25	0.00	237.6	20.2
Headline 6 oz V6 + Headline AMP 10 oz R1	1.01	1.40	13.75	7.75	1.00	237.0	20.3
Headline AMP 10 oz R2	1.70	1.95	5.00	9.00	0.50	232.9	20.0
Stratego YLD 4 oz V6	1.85	3.05	21.25	10.75	0.00	234.2	20.0
Stratego YLD 4 oz R1	1.13	1.90	12.50	8.50	0.50	234.1	20.3
Stratego YLD 4 oz V6 + Stratego YLD 4 oz R1	1.38	1.55	16.25	8.00	0.25	233.3	20.1
Stratego YLD 4 oz R2	1.80	2.45	7.50	8.25	0.75	236.8	20.2
Quadris 6 oz V6	1.85	2.75	21.25	10.50	1.75	236.9	20.2
Quilt Xcel 14 oz R1	0.70	2.00	10.00	6.75	0.75	237.0	20.0
Quadris 6 oz V6+ Quilt Xcel 14 oz R1	1.03	1.65	10.00	5.25	0.00	231.0	20.5
Quilt Xcel 14 oz R2	1.13	1.75	6.25	7.00	0.00	238.4	20.1
LSD _{0.10}	0.68	1.00	6.68	NS	NS	NS	NS
C.V. (%)	31.39	31.77	33.42	47.72	171.69	2.35	3.74

^aEar leaf disease on a percentage of leaf area infected. N= 5 plants per plot^bMean percent disease on a plot basis of upper canopy of plants in the middle two rows of the plot.^cPercentage of plants in the middle two rows of the plot with anthracnose top die back.^dPush test is number of plants lodging out of 20 when pushed to the 2 o'clock position.^eBushels/acre at 15.5 percent moisture